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HelMod: a Comprehensive Treatment of the Cosmic Ray transport through the Heliosphere

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HelMod is a code accounting for the transport of Galactic cosmic rays through the inner heliosphere down to Earth. It is based on a 2-D Monte Carlo approach and includes a general description of the symmetric and antisymmetric parts of the diffusion tensor, thus, properly embedding the particle drift effects. The model has been tuned in order to fit the data observed outside the ecliptic plane at several distances from the Earth and the spectra observed near the Earth for both, high and low solar activity levels. A stand-alone python module, fully compatible with GalProp, was developed for a comprehensive calculation of solar modulation effects, resulting in a newly suggested set of local interstellar spectra.

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